

REMARKS

Please reconsider this application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Disposition of Claims

Claims 60-69 are currently pending in this application. Claim 60 is independent. The remaining claims depend, directly or indirectly, from claim 60.

Amendments to the Claims

Claims 60-62 have been amended to more precisely claim the present invention. Support for the amendment can be found, for example, in Figs 15-19, 28-30, and 32, and paragraphs [0217] and [0218] of the published application. No new matter has been added by way of the amendments.

Rejections Under 35 U.S.C. § 103

Claims 60-66, and 69 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0129107 (“Denes”) in view of U.S. Patent No. 5,500,256 (“Watabe”). Claims 60-62 have been amended by way of this reply. To the extent that the rejections may still apply, this rejection is respectfully traversed.

Claim 60, as amended, requires, in part, “an elongate metallic first electrode body that is longer in a longitudinal direction orthogonal to said passage direction and shorter in the passage direction,” “the first electrode body having an elongate outer first surface which is a flat

surface crossing with an arranging direction orthogonal to both the passage direction and the longitudinal direction and which is longer in said longitudinal direction and shorter in the passage direction,” “an elongate metallic second electrode body that is longer in said longitudinal direction and shorter in the passage direction,” “said second electrode body having an elongate outer second surface which is a flat surface crossing with the arranging direction and facing said first surface in said arranging direction and which is longer in the longitudinal direction and shorter in the passage direction,” “an elongate dielectric first case body that is longer in is in the longitudinal direction and shorter in the passage direction,” and “said gas passage being longer in the longitudinal direction and shorter in the passage direction.”

In the Office Action, the Examiner asserts that “Applicant’s position merely amounts to a reorientation of the prior art’s apparatus,” and “that a claimed feature is ‘elongate’ in *any* direction is in the Examiner’s opinion simply a statement that that feature has a depth in that given direction.”

The claims define three directions that are all orthogonal to each other: a passage direction, a longitudinal direction, and an arranging direction. By claiming three orthogonal directions, Applicant has established three dimensional axes. Furthermore, the claims require that “processing gas is passed along a passage direction.” Thus, at least the passage direction is concretely defined as a direction along which processing gas is passed, and the prior art therefore cannot be reoriented in such a way that the passage direction is no longer a direction along which processing gas is passed.

Additionally, in view of the Examiner's assertion that he does not agree with Applicant that "elongate" in a given direction means longer in that direction, Applicant has amended the claims to explicitly require that the elongate metallic first electrode body, the elongate outer first surface, the elongate metallic second electrode body, the elongate outer second surface, the elongate dielectric first case body, and the gas passage are longer in the longitudinal direction and shorter in the gas passage direction. That is, claim 60 requires at least that all the stated elements are shorter in the passage direction in which the processing gas passes than in the longitudinal direction.

Denes discloses a plasma source 400 having a first electrode 402 extending from a first electrode bed 404 and a second electrode member 406 having a gas passage 408 defined therein between an inlet surface 410 and an outlet surface 412, and the gas passage walls defining a second electrode 414. An insulating layer 416 is provided on the walls of the gas passage 408.

The Examiner asserts that gas passage 408 in Fig. 4 of Denes reads on the gas passage of claim 60. Thus, the passage direction would be the vertical direction of Fig. 4 in which gas passes through the gas passage 408. This is consistent with Examiner's explanation during the telephone interview of July 22, 2008 that the Examiner considers the vertical direction of Fig. 4 to be the passage direction. Furthermore, the Examiner explains on page 11 of the Office Action that he believes that the claimed longitudinal direction is "a direction into and out of the page in Fig. 1," which Applicant notes is also into and out of the page in Fig. 4. However, as shown in Fig. 4, the gas passage 408 of Denes is clearly longest in vertical direction, which is the direction in which gas passes, and which the Examiner agrees is the passage direction. Thus, the gas passage 408 is not

“longer in the longitudinal direction and shorter in the passage direction,” as now explicitly required by claim 60.

The Examiner further asserts that second electrode member 406 of Denes reads on the elongate metallic first electrode body, that the 416/406 interface of Denes reads on the elongate outer first surface, that the first electrode 402 of Denes reads on the elongate metallic second electrode body, that outer surfaces of 402 of Denes reads on the elongate outer second surface, and that insulating layer 416 of Denes reads on the elongate dielectric first case body.

However, in Denes, the first electrode 402, the 416/406 interface, and insulating layer 416 are clearly longest in the vertical direction in which gas passes and, therefore, are not longer in the longitudinal direction and shorter in the passage direction, as now explicitly required by claim 60.

Additionally, the above limitations require that the elongate outer first surface be a *flat surface* crossing with an arranging direction orthogonal to both the passage direction and the longitudinal direction. However, as shown in Figs. 1 and 4, the 416/406 interface that the Examiner equates to the elongate outer first surface of claim 60 is cylindrical and curved, and not a flat surface, as required by the claim.

The above limitations also require that the elongate outer second surface be a *flat surface* crossing with the arranging direction and facing said first surface in said arranging direction. However, as shown in Figs. 1 and 4, the outer surface 402 that the Examiner equates to the elongate outer second surface of claim 60 is cylindrical and curved, and not a flat surface, as required by the claim.

Watabe, which discloses a vapor phase process for processing semiconductor wafer surface by supplying a process gas to the surface, clearly fails to supply that which Denes lacks regarding the above limitations. This is evidenced by the fact that Watabe is only relied upon to teach an electric field applied from electric power sources and grounded electrodes.

Claim 60, as amended, further requires, in part, “said first case body being formed a cross section orthogonal to said longitudinal direction into a U-shape so that said first case body has a first internal space and a first opening,” and “out of four sides of the first internal space, consisting of two sides of the arranging direction and two sides of the passage direction, three sides being surrounded by the first case body and a remaining side being opened to an outside and provided as the first opening.”

On page 11 of the Office Action, the Examiner states that “the Examiner has reconsidered his Application of Denes and believes the cited first case body (416; Figure 4; [0041]) being formed of a cross section (Figure 4) orthogonal to said longitudinal direction (width of 140/146/402/406; Figure 1, 4) into a U-shape (compare Applicant’s 57a; Figure 19 to U-shaped 416 into page – Figure 1 U Shape). Indeed, the Examiner believes some clarification is needed in interpreting this claim requirement. As the Examiner stated in the July 22, 2008 interview, he believes that longitudinal direction claimed is equivalent to a direction into and out of the page in Figure 1. As such a cross section orthogonal to this longitudinal direction is a cross section parallel to the plane of the paper in Figure 1 itself. Such a cross-section is shown in Figures 3 and 4 and is thus the claimed U-shape.”

However, contrary to the Examiner assertion, in the cross-section shown in Figure 4, insulating layer 416 is two parallel bars, and not a U-shape, as required by the claims.

Furthermore, in Denes, only two sides of the internal space of the insulating layer 416 are surrounded by the insulating layer 416, whereas the claim as amended requires that, out of four sides of the first internal space, *three sides* are surrounded by the first case body. Additionally, the insulating layer 416 of Denes is opened to both the top and the bottom, whereas the claim as amended requires that only the one remaining side is opened.

Watabe clearly fails to supply that which Denes lacks regarding the above limitations. This is evidenced by the fact that Watabe is only relied upon to teach an electric field applied from electric power sources and grounded electrodes.

Claim 60, as amended, further requires, in part, "said first electrode body being received in said first internal space so that said first surface is contacted with an inner peripheral surface of said first case body," "said second electrode body being disposed outside the first internal space of said dielectric first case body in said arranging direction," and "said first opening facing away from said second electrode body."

In Denes, the second electrode member 406, which the Examiner equates to the first electrode body of claim 60, is not received in the first internal space of the insulating layer 416, which the Examiner equates to the dielectric first case body of claim 60. Instead, the second electrode member 406 is disposed outside of the insulating layer 416. Additionally, the first electrode 402, which the Examiner equates to the second electrode body of claim 60, is disposed inside of the first internal space of the insulating layer 416.

The Examiner states on page 12 of the Office Action that “the Examiner has reconsidered his grounds and believes Denes’ “first electrode body (406; Figure 4; [0041] being received in said dielectric (“insulating layer” – “ceramic coating”, Figure 3,4; [0015]) first case body (416; Figure 4; [0041]) so that said first surface (416/406 interface; Figure 4; [0041]) is contacted with an inner peripheral surface of said first case body (416; Figure 4; [0041]).”

However, Fig. 4 of Denes shows that the insulating layer 416 is disposed within a hole disposed in the second electrode member 406. Thus, the second electrode member 406 is not received in an *internal* space of the insulating layer 416. Additionally, the insulating layer 416 is a cylinder having an outer peripheral surface and an inner peripheral surface. Fig. 4 of Denes shows that the 416/406 interface is contacted with the *outer* peripheral surface of the cylinder, and not the inner peripheral surface thereof.

The Examiner further states on page 12 that “Applicant’s initial argument that the only surface of second electrode member 406 in contact with the insulating layer 416 is the inner surface, and not the outer surface, of the first electrode body is not commensurate with the scope of the claims. In response to applicant’s argument that the references fail to show certain features of applicant’s invention, it is noted that the features upon which applicant relies (i.e., the only surface of second electrode member 406 in contact with the insulating layer 416 is the inner surface, and not the outer surface, of the first electrode body.) are not recited in the rejected claims.”

However, claim 60 explicitly requires “the first electrode body having an elongate outer first surface” and “said first surface is contacted with an inner peripheral surface of said first case body.” That is, the claim explicitly requires that an outer first surface of the first electrode

body is contacted with an inner peripheral surface of the first case body. In contrast to the claimed invention, in Denes, *the inner, and not the outer*, surface of the second electrode member 406 is in contact with the outer peripheral, and not the inner peripheral, surface of the insulating layer 416.

Watabe clearly fails to supply that which Denes lacks regarding the above limitations. This is evidenced by the fact that Watabe is only relied upon to teach an electric field applied from electric power sources and grounded electrodes.

In pages 5-6, the Examiner admits that Denes fails to teach the limitation “an end part on a side of said first opening of said first case body being protruded in said one side direction relative to said first electrode body” of claim 60. The claim has been amended to recite “an end part on a side of said first opening of said first case body being protruded in said one remaining side relative to said first electrode body.” This limitation is not shown in Denes.

In response to our previous arguments that the above limitations are not shown by Denes, the Examiner states on page 13 of the Office Action that “the Examiner addresses this claim limitation at the final portion of the 103 analysis – “It would ... to reproduce and/or make separable Dene’s electrode structure (Figure 4; [0041]), inclusive, to power or ground Dene’s electrodes (416; Figure 4; [0041]) as taught by Watabe and optimize apparatus shapes/dimensions.”

The Examiner’s appears to rely on optimization of apparatus shape to cover the above limitations, which Examiner admits is not shown. However, the protrusion on the end part on the side of the first opening of the first case body is not a simply optimization of the shape, because the feature is functionally advantageous in that it has an unexpected effect of helping prevent an abnormal discharge from leaking outside the first case body.

Watabe clearly fails to supply that which Denes lacks regarding the above limitations. This is evidenced by the fact that Watabe is only relied upon to teach an electric field applied from electric power sources and grounded electrodes.

In view of the above, claim 60 is patentable over Denes and Watabe, whether considered separately or in combination, at least for the above reasons. Claims 61-66, and 69 depend, either directly or indirectly, from claim 60. Thus, claims 61-66, and 69 are patentable over Denes and Watabe, at least for the same reasons as claim 60. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 67 and 68 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Denes and Watabe in view of U.S. Patent No. 6,137,231 ("Anders"). This rejection is respectfully traversed.

As explained above, claim 60 is patentable over Denes and Watabe. Further, Anders fails to supply that which Denes and Watabe lack, as evidenced by the fact that Anders is only relied upon to disclose a plasma source array having a plate/electrode varying along a direction of gas flow.


In view of the above, claim 60 is patentable over Denes, Watabe, and Anders, whether considered separately or in combination, at least for the above reasons. Claims 67 and 68 depend indirectly from claim 60. Thus, claims 67 and 68 are patentable over Denes, Watabe, and Anders, at least for the same reasons as claim 60. Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

Applicant believes this reply to be responsive to all outstanding issues and place the application in condition for allowance. If this belief is incorrect, or any other issues arise, do not hesitate to contact the undersigned or his associates at the telephone number listed below. Favorable action in the form of a Notice of Allowance is respectfully requested. Please apply any charges not covered, or any credits, to Deposit Account No. 50-0591, under Order No. 12088/019001 from which the undersigned is authorized to draw.

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Respectfully submitted,

By  #45,079
Jonathan P. Osha *THOMAS SCHERER*
Registration No.: 33,986
OSHA · LIANG LLP
909 Fannin Street, Suite 3500
Houston, Texas 77010
(713) 228-8600
(713) 228-8778 (Fax)
Attorney for Applicant